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Avifauna changes of the Kis-Balaton Reservoir area

by
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Abstract: The avifauna of the artificial water-reservoir in the Kis-Balaton Landscape Protection Area was studied between 1984 and 1988. The study area includes a newly made lake of 2500 hectares and its surrounding marshes, meadows, forests, and bushy vegetation. During the first five years of the new lake's surroundings, eighty-four breeding bird species were recorded. Among the eighty-four species, there were fifty-six, which had been breeding in the area before it became flooded in 1984. The other twenty-eight species were pioneers or settlers in the area after the lake had been made. The nesting of the Red-crested Pochard (*Netta rufina*) here is the first record in Hungary.
Key words: Reservoir, Kis-Balaton Landscape Protection Area, habitat change, avifauna

INTRODUCTION

In the early 80s there was a great investment in order to reduce the eutrophication of Lake Balaton. One of these projects was aimed at recreating the former role of the marshy Kis-Balaton, to filter the polluted water of the River Zala.

For this purpose they built an artificial lake of 2500 hectares in the basin between the villages Zalavár, Zalaszabar, Garabonc, and Balatonmagyaród. Today the lake is divided into ten different regions. Most of them are connected with one another. The water regions are numbered (I-X) and named mostly after the villages (Fig. 1). In 1988 the area became protected, and since then it is part of the Kis-Balaton Landscape Protection Area.

In the present paper, I wish to give a preliminary summary of the avifauna changes of the area (a detailed elaboration will be published elsewhere), and in the second part, I will give short descriptions of the population trends for some species of the orders Podicipediformes and Anseriformes, which are of great conservation importance in the area.

METHOD

I started to study the whole avifauna of the area in 1984 when the area was first flooded. The main concern was learning what species would adapt to life in the new artificial lake. For this purpose I did most of my field work during the breeding season. Besides my field data, I was provided with useful information and population data by the E. FUTÓ, the nature conservation guard of the protected area.

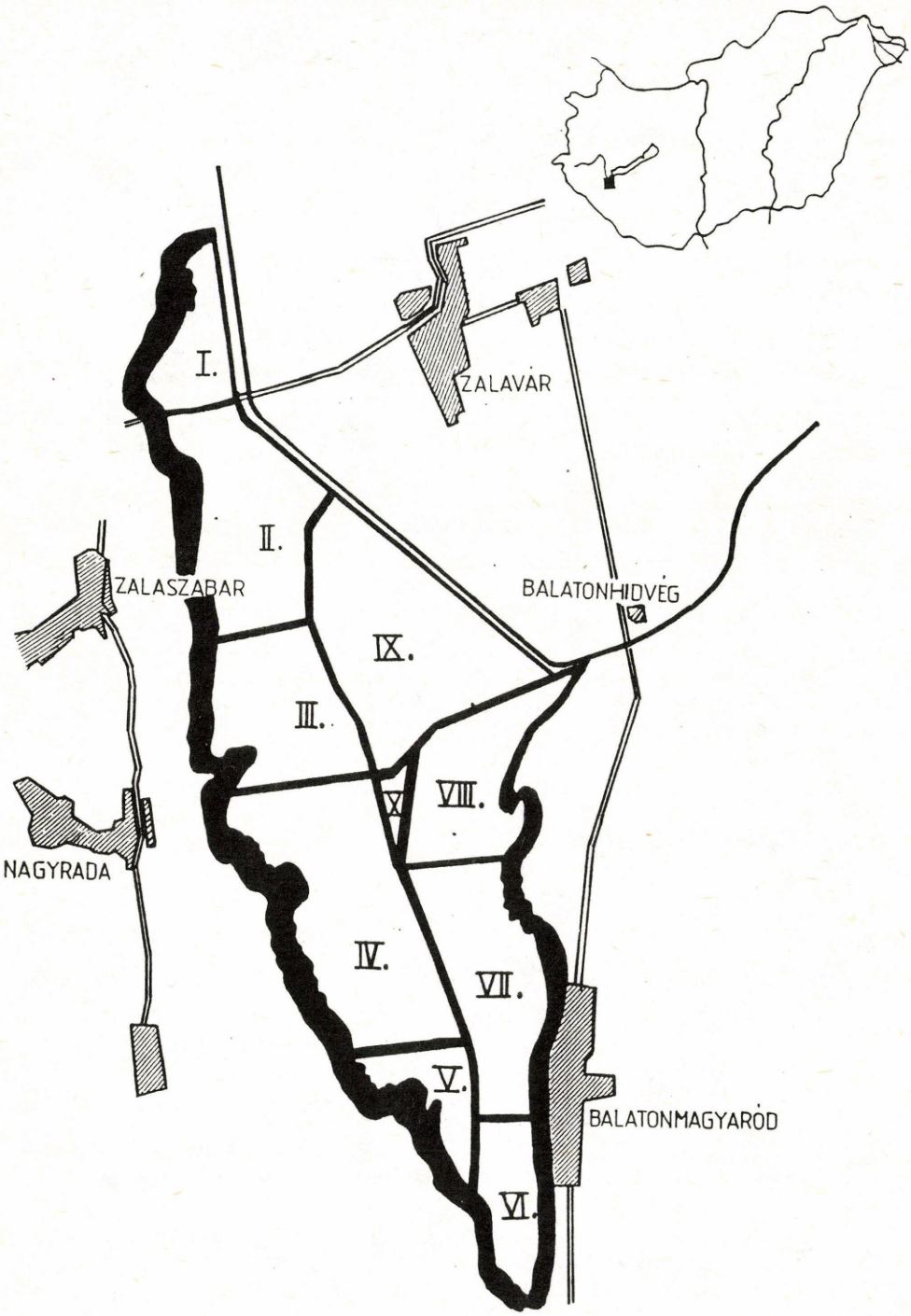

Fig. 1. The situation of the Kis-Balaton Reservoir

In the first years my investigations were incorporated into the scientific program of the Eötvös Lóránd University, headed by G. GERE. Later, as I started to work in the Hungarian Natural History Museum, I joined the museum's Balaton ecological research program.

RESULTS AND DISCUSSION

Different habitats: wet meadows (*Alopecuretum pratensis*, etc.), marshy forests (*Alnetum glutinosea, Salicetum*, etc.), and some agricultural fields of the villages Zalavár, Zalaszabar, Nagyrada, Garabonc, and Balatonmagyaród had suffered dramatic changes due to the inundation in 1984. These habitat modifications caused dramatic changes in the populations of the bird communities.

No bird species have disappeared from the area due to the habitat changes because their original habitat remained as fragments along the edges of the lake and in the islands. However, the population size of different species declined in different rates and quantities.

I have found eighty-four breeding bird species in the flooded area and in intact habitat fragments in the area during the first five years of the reservoir (Table 1 and 3).

We can divide the present-day avifauna into two groups according to their origin as follows.

1. Former breeding species of the area (56). (Table 1)
2. New settlers of the area after it was flooded (28) (Table 3).

Populations of the 1. group's species show two different tendencies:

a.) There are fourty-seven species whose breeding habitats have changed in a negative way. Their populations have declined but have survived and presently they breed in the intact habitat fragments remaining along the edge of the area, and on the islands of the lake.

b.) There are nine species whose breeding habitats have changed in a positive way. Their populations increased after the inundation (Table 2).

Table 1. The list of the former breeding species of the Kis-Balaton Reservoir area (56 species)

Non-Passeres

Podiceps ruficollis
Anas platyrhynchos
Anas querquedula
Anas acuta
Anas clypeata
Buteo buteo
Falco tinnunculus
Perdix perdix
Phasianus colchicus
Rallus aquaticus
Porzana porzana
Gallinula chloropus
Vanellus vanellus

Parus major
Parus caeruleus
Remiz pendulinus
Sitta europea
Certhia brachydactyla
Troglodytes troglodytes
Turdus philomelos
Turdus merula
Saxicola torquata
Saxicola rubetra
Luscinia megarhynchos
Erithacus rubecula
Locustella fluviatilis
Acrocephalus schoenobaenus
Sylvia atricapilla

Columba palumbus
Streptopelia turtur
Cuculus canorus
Merops apiaster
Dendrocopus major

Passeres

Alauda arvensis
Hirundo rustica
Riparia riparia
Oriolus oriolus
Corvus cornix
Pica pica
Garrulus glandarius
Sylvie communis
Sylvie nisoria
Phylloscopus collybita
Muscicapa striata
Motacilla alba
Motacilla flava
Lanius collurio
Sturnus vulgaris
Passer domesticus
Passer montanus
Chloris chloris
Carduelis carduelis
Serinus serinus
Fringilla coelebs
Emberiza citrinella
Emberiza schoeniclus

Table 2. Former breeding species of the area, for which the inundation resulted in habitat improvements

Podiceps ruficollis
Anas querquedula
Anas clypeata
Porzana porzana
Emberiza schoeniclus
Anas platyrhynchos
Anas acuta
Rallus aquaticus
Gallinula chloropus

Table 3. Species settled in the Kis-Balaton Reservoir after the inundation between 1984-1988

Podiceps cristatus
Podiceps nigricollis
Podiceps griseigena
Ixobrychus minutus
Botaurus stellaris
Cygnus olor
Anser anser
Anas strepera
Netta rufina
Aythya ferina
Aythya fuligula
Aythya nyroca
Circus aeruginosus
Porzana parva
Fulica atra
Charadrius dubius
Tringa totanus
Himantopus himantopus
Recurvirostra avosetta
Larus ridibundus
Larus melanocephalus
Chlidonias hybrida
Chlidonias niger
Sterna hirundo
Panurus biarmicus
Locustella luscinioides
Acrocephalus arundinaceus
Acrocephalus scirpaceus

Most parts of the flooded area do not represent a sufficient habitat for the former bird populations, but the newly made wetland (i.e. the 2500 hectare lake with its small islands and dams) provides a new and "empty" biotope for *wetland birds*.

After investigating the population trends of the new settlers, we can form different groups from the 28 species (Table 3).

1. There is one species, the Red-crested Pochard (*Netta rufina*), which is new as a breeding bird for the whole Hungarian avifauna. Its first breeding was proved by E. FUTÓ in 1986 (BANKOVICS 1988, FUTÓ 1990).

2. There are some species, which settled in relatively greater number in the first years, but in spite of the successful breeding, they settled in smaller number in the following years, and eventually disappeared from the area, e.g. *Podiceps nigricollis, P. griseigena.*

3. There are some species, which settled in greater number in the first years, but after that the populations declined, e.g. *Anas strepera, Aythya fuligula, Chlidonias niger.*

4. Some species settled in the first years, but after unsuccessful nesting attempts and/or inappropriate conditions, and since the second year they have disappeared, e.g. *Charadrius dubius, Himantopus himantopus, Recurvirostra avosetta.*

5. Many of the new settler species have established a strong and stable population from the first year to the present, e.g. *Anser anser, Aythya ferina, Aythya nyroca, Fulica atra, Larus ridibundus, Sterna hirudo.*

6. Some species have settled in small number in the first year and have gradually increasing breeding populations, e.g. *Podiceps cristatus, Chlidonias hybrida.*

Detailed descriptions

Fam. Podicipedidae

Black-necked Grebe (*Podiceps nigricollis*)

The breeding population size of this species shows an interesting trend. It has established rather strong colonies in the first year (1985) of the inundation. In the second year (1986) the number of breeding pairs further increased, but from the third year (1987), it began to decline (Table 4). In the years 1989 and 1990 it has not bred here at all.

Based on its occupation pattern it seems to be a pioneer settler on fresh flooded areas. This character was already observed earlier. KONCZ (1967) reported its colony from a flooded maize field at Fülöpháza in 1966. I have found new colonies of this species in a newly established and first-flooded fish pond at Csaj-tó, Tömörkény in 1970.

Red-necked Grebe (*Podiceps griseigena*)

It is the rarest breeding species of grebes in Hungary. Its main breeding sites are in the Great Hungarian Plain. In the western part of the country its nesting was proved at Irmapuszta and Tihany near the Lake Balaton (KEVE 1976). The first breeding in the Kis-Balaton Nature Reserve was only proved in 1989.

Surprisingly, in the reservoir were found two breeding pairs by E.FUTÓ in the first year (1985), and there was at least one breeding pair in both 1986 and 1987 (Table 4).

Great-crested Grebe (*Podiceps cristatus*)

I think its increasing number correlates to the increasing trends of fish populations which have occupied the ponds naturally and by introduction. A few breeding pairs were already observed in 1984 after the experimental inundation in May. Later the *P. cristatus* popopulation increased gradually (Table 4).

Table 4. Breeding population data of some species on the Kis-Balaton Reservoir (breeding pairs)

Year	1984	1985	1986	1987	1988
Species					
Podiceps nigricollis	–	100	150	85	50
Podiceps cristatus	10	78	105	120	130
Podiceps griseigena	–	2	1	1	–
Ixobrychus minutus	–	–	–	3	4
Botaurus stellaris	–	–	1	1	1
Anser anser	–	15	10	10	8
Anas strepera	–	86	50	50	60
Netta rufina	–	2	3	4	3
Aythya fuligula	–	46	150	134	115
Himantopus himantopus	–	–	1	–	–
Recurvirostra avosetta	–	–	3	–	–
Larus ridibundus	–	1800	1000	2000	2000
Larus melanocephalus	–	–	4	4	–
Chlidonias hybrida	–	50	50	140	170

Fam. Anatidae

Grey-leg Goose (*Anser anser*)

Its breeding population has grown in Hungary since the early 1970s. Since then, it has occupied new breeding sites like the Külső-tó in Tihany Peninsula, the Kolon-tó in the Kiskunság, etc. The population date of the different sites were collected by Cs. ARADI and G. KOVÁCS in 1981. The results show approximately 600 pairs east from the Danube and approximately 200 pairs in the western half of the country in the late 1970s (ARADI & KOVÁCS 1982).

The former Kis-Balaton Nature Reserve is a traditional breeding site of the Grey-leg. In 1979 about 120 pairs, in 1980 70 pairs bred (ARADI & KOVÁCS 1982). The nearby created reservoir had provided a further suitable breeding habitat, thus it was occupied by the first pairs in the first year. In 1985 15 pairs bred there. After this there was a slight decrease (see Table 4), but later the population number increased and in 1990 at least 22 pairs bred.

Gadwall (*Anas strepera*)

Since about the middle 1960s its population suffered a great decrease in Hungary. The best breeding places where this species has survived the critical years were the Csaj-tó (fishpond-system at Tömörkény) and the Kis-Balaton. Presently its population is increasing again in many other places in Hungary. At the Kis-Balaton area it had also declined in the 1960s. WARGA (1959) treated it as one of the most frequent duck species of the Kis-Balaton based on his observations in the 1940s. In March 1957 there were estimated 300 specimens during spring migration, and 700 specimens during autumn migration in 1960 (KEVE 1976). In the 1970s its number had seldom reached the maximum of 50 specimens during bird censuses.

The Gadwall population has shown a growing tendency in many sites of the country in the 1980s. It was a fortunate coincidence then, the new breeding habitat was created by the inundation of the Kis-Balaton Reservoir. Just after the area became flooded they occupied it, and FUTÓ (1990) estimated eighty-six breeding

pairs in 1985 and fifty pairs in the years 1986 and 1987. The population was estimated to have sixty breeding pairs in 1988 (Table 4).

Red-crested Pochard (*Netta rufina*)

It was a rare passage migrant in Hungary until the 1960s. Since then its occurrences become more frequent (BANKOVICS 1968, 1986, 1987). I surmise that it was the consequence of the growing breeding population of the Lednice area in Czechoslovakia. From the Lednice area it began to spread in the direction of Lake Fertő, where it has also settled as a breeding species in 1986 (KÁRPÁTI pers. comm.).

In the Kis-Balaton Reservoir a few breeding pairs settled since the first year (1985), and since then they breed continuosly every year (Table 4).

Tufted Duck (*Aythya fuligula*)

This species used to be very rare and an irregular breeding bird in Hungary until the Kis-Balaton Reservoir was established. Its first breeding case in Hungary was reported in 1965 (NAGY 1967). Until 1984 their breeding cases were recorded in different sites.

In the Kis-Balaton Reservoir they became a rather numerous species, and they are the dominant one among the diving ducks. In the first year (1985) forty-six breeding pairs were counted. The population number increased three-times in the next year (1986), but showed a slight decrease following that (Table 4).

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